

Abstract Submitted  
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**Plasmons and The Spectral Function of Graphene** MARCO

POLINI, NEST-CNR-INFM and Scuola Normale Superiore, I-56126 Pisa, Italy, REZA ASGARI, Institute for Studies in Theoretical Physics and Mathematics, Tehran 19395-5531, Iran, GIOVANNI BORGHI, NEST-CNR-INFM and Scuola Normale Superiore, I-56126 Pisa, Italy, YAFIS BARLAS, T. PEREG-BARNEA, A.H. MACDONALD, Department of Physics, The University of Texas at Austin, Austin Texas 78712 — We report on a theoretical study of the influence of electron-electron interactions on the one-particle Green's function of a doped graphene sheet based on the random-phase-approximation and on graphene's massless Dirac equation continuum model. We find that states near the Dirac point interact strongly with plasmons with a characteristic frequency  $\omega_{\text{pl}}^*$  that scales with the sheet's Fermi energy and depends on its interaction coupling constant  $\alpha_{\text{gr}}$ , partially explaining prominent features of recent ARPES data.

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